**Calculus Final Project**

**21st Century Learning**

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**Objective:**

Today we will demonstrate understanding of the basic concepts of Calculus and their applications.

You will know you have learned this when you can complete and present your Final Project and score 80% or higher.

**21st Century Skills Addressed\*:**

Communication, Interpersonal & Collaborative Skills

Critical Thinking & Systems Thinking

Problem Identification, Formulation & Solution

Creativity & Intellectual Curiosity

Self-Direction, Accountability & Adaptability

**Project Goals:**

Student Directions (see below for Project Description)

**Assessment:**

See below for Presentation Rubric and Project Rubrics for different topics.

**Final Project Description Provided to Students**

**Name Date**

**Final Project - Due date: Monday, May 24th**

**Presentations - Tuesday, Wednesday, and Thursday May 25th, 26th, and 27th**

*You may work alone or with one other person on this project. Instructions are listed below. You may use any materials you wish to make your presentations. Grade scale: 40% Accuracy of mathematical procedures, 10% Correct use of grammar, spelling, and structure 25% Presentation, 25% Creativity and neatness. This project is worth 15% of your 4th marking period grade, it is meant to be a fun and creative project, but don’t forget this is AP Calculus, so you need to put in the appropriate time and effort to receive a good grade.*

CONGRATULATIONS! You have finished the AP Calculus curriculum and taken the AP Calculus AB exam. Those are both huge accomplishments and you should be very proud of yourselves. You have all worked very hard throughout the year and this project is your last grade of the marking period, so put a lot of creativity and effort into it to finish up an amazing year.

All writing for these projects must be typed. You may also use poster boards or PowerPoint for your project and/or presentation. Any other models, lab materials, etc. that you can use are welcomed. Everyone will do an oral presentation on Tuesday, May 25th, Wednesday, May 26th or Thursday, May 27th.

Depending on the project you choose, your presentation may be a minimum of 5 minutes to a maximum of 20 minutes. You may choose to videotape your project and/ or presentation and show this to the class on the presentation dates. **All projects will be due on Monday, May 24th.** If your project is late, you will lose 10% for each day it is late. You must also be present on the day that you sign up to present your topic or you will get zero points for your presentation. If you are absent on the day that you are presenting, you will lose 5% off of your project grade each day you are absent.

**Topic Ideas:**

* Investigate any topic covered in our textbook that we did not do, prepare problems, teach the section to the class and have an in-class activity (make sure you present the solutions and bring creativity into this).
* Write a short story with fictional characters (or real people’s names if you dare) that explains a concept of calculus
* Create a game for learning calculus concepts (could be a calculator program, board game, etc.)
* Learn how to use winplot ( google “winplot calclus” and you will see instructions for downloading the winplot program). Demonstrate to the class how winplot can be used to help solve various calculus problems and help further understanding of calculus topics.
* Investigate the uses of calculus in business and economics. Create a model or write a paper that portrays what you have learned.
* Create a Calculus “concept map”. Put it in a creative format (family tree, subway map, etc.). This will show how calculus topics are related to each other.
* Any other topic: must be approved by me.

**If you choose option 1, a lesson**

Each lesson must address:

* Prerequisite skills necessary to understand the concept
* New vocabulary defined and discussed
* At least 2 problems modeled for students
* At least 3 practice problems for students to complete independently

Your lesson overview must include:

* A summary of the introduction to the concept that you will present to the class
* The notes you will give with the examples and answers
* The problems you will model for the class
* The class work problems you will assign to the class, and a second copy with the answers

**Timeline:**

Wednesday, May 12th: Project topic due

Monday, May 17th: Project checkpoint: Must bring in an outline or a progress report of what you have accomplished on your project so far. This document can be typed up or hand-written.

Monday, May 24th: Final Project due

Tuesday, May 25th / Wednesday, May 26th / Thursday, May 27th: Project Presentations

**Grading:**

*40% Accuracy of mathematical procedures*

*10% Correct use of grammar, spelling, and structure*

*25% Presentation*

*25% Creativity and neatness*

In addition to me grading these projects and presentations, you will also be judged by four of your peers.

**Resources you can use:**

Internet

Public Library

South Philadelphia Library

Video equipment-see Mr. Napoleon

Text Book

Me ☺

**Final Project Scoring Rubric**

**The rubric below is used to assign a final score for the project. The total score will be based on the project itself and the presentation. The specific scoring rubrics for the project and the presentation are shown below.**

**Final Project Grading Rubric**: Name(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Topic\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Project**: 75%

* Accuracy of mathematical procedures: 40% score out of 40\_\_\_\_\_\_\_\_

Comments:

* Correct use of grammar, spelling and structure 10% score out of 10\_\_\_\_\_\_\_

Comments:

* Creativity and neatness 25%, score out of 25\_\_\_\_\_\_\_\_\_\_\_\_

Comments:

**Presentation**: 25% Score out of 25\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-

Comments:

**Presentation Rubric**

**All students will be given a score for the presentation of the project based on the rubric below. This rubric will be the same for all of the different topics that the students can select.**

**Calculus I/AB**

**Final Project Presentation Rubric**

**Names:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Scoring Guide**:

☺ - 5 points, Achieved or exceeded expectation.

😐 - 4 points, Almost achieved expectation.

☹ - 3 points, Did not meet expectation.

**Presentation (25%):**

☺ 😐 ☹ 1. Presentation provides a clear explanation of

how the project relates to and explains concepts in Calculus.

☺ 😐 ☹ 2. Presenters demonstrate strong knowledge of topic

☺ 😐 ☹ 3. Presentation flows and is of appropriate time.

☺ 😐 ☹ 4. Presenters speak loud and clearly.

☺ 😐 ☹ 5. Both team members equally contribute to

Presentation (if applicable)

☺ 😐 ☹ 6. Presentation is creative and engaging.

\_\_ \_\_ \_\_ Totals Total Score:

**Project Rubric for Short Story and Calculus Lesson**

**Each typed project will be scored based on a rubric similar to the ones below. Each topic has a slightly different rubric, but the format of scoring based on mathematical accuracy, neatness, and creativity is the same for all project topics.**

**Calculus I/AB**

**Final Exam Project – Short Story**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class:\_\_\_\_\_\_\_**

**Scoring Guide**:

☺ - 5 points, Achieved or exceeded expectation.

😐 - 4 points, Almost achieved expectation.

☹ - 3 points, Did not meet expectation.

**Accuracy of Mathematical Concepts and Procedures**

☺ 😐 ☹ 1. Story includes a major Calculus topic as the central

theme.

☺ 😐 ☹ 2. Demonstrates a strong conceptual knowledge of

Calculus.

☺ 😐 ☹ 3. Calculus concepts are explained accurately

throughout the story.

☺ 😐 ☹ 4. Makes meaningful connections between Calculus

topics and the plot of the story.

☺ 😐 ☹ 5. Calculus topics in the story are explained clearly

through the plot of the story.

☺ 😐 ☹ 6. There is evidence of equal contributions from both

team members (if applicable).

☺ 😐 ☹ 7. Complete story is handed in on time.

☺ 😐 ☹ 8. Evidence of progress is demonstrated at each

checkpoint throughout the project.

\_\_ \_\_ \_\_ Totals Total Score:

Comments:

**Correct use of grammar, spelling and structure**

☺ 😐 ☹ 1. Minimal errors in grammar and spelling

☺ 😐 ☹ 2. Story flows well and the plot is well structured

\_\_ \_\_ \_\_ Totals Total Score:

Comments:

**Creativity and neatness**

☺ 😐 ☹ 1. Paper is organized and neat.

☺ 😐 ☹ 2. Story is creative and engaging to the reader

☺ 😐 ☹ 3. Story integrates the concept(s) of Calculus in a

creative way.

☺ 😐 ☹ 4. Story explains the concept(s) of Calculus in a

clear way.

☺ 😐 ☹ 5. Paper is typed and is 2-4 pages in length.

\_\_ \_\_ \_\_ Totals Total Score:

Comments:

**Calculus I/AB**

**Final Exam Project – Calculus Lesson**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class:\_\_\_\_\_\_\_**

**Scoring Guide**:

☺ - 5 points, Achieved or exceeded expectation.

😐 - 4 points, Almost achieved expectation.

☹ - 3 points, Did not meet expectation.

**Accuracy of Mathematical Concepts and Procedures**

☺ 😐 ☹ 1. Paper includes a Calculus topic that we have not

covered in class.

☺ 😐 ☹ 2. Demonstrates a strong conceptual knowledge of

Calculus.

☺ 😐 ☹ 3. Calculus concept and required vocabulary are

explained clearly and accurately through the lesson.

☺ 😐 ☹ 4. At least two example problems are demonstrated

during the lesson.

☺ 😐 ☹ 5. At least three practice problems are provided for

classmates to complete.

☺ 😐 ☹ 6. There is evidence of equal contributions from both

team members (if applicable).

☺ 😐 ☹ 7. Paper describing Calculus lesson and examples is

handed in on time.

☺ 😐 ☹ 8. Evidence of progress is demonstrated at each

checkpoint throughout the project.

\_\_ \_\_ \_\_ Totals Total Score:

Comments:

**Correct use of grammar, spelling and structure**

☺ 😐 ☹ 1. Minimal errors in grammar and spelling

☺ 😐 ☹ 2. Paper flows well and is well structured

\_\_ \_\_ \_\_ Totals Total Score:

Comments:

**Creativity and neatness**

☺ 😐 ☹ 1. Paper is organized and neat.

☺ 😐 ☹ 2. Explanation of Calculus topic is creative and

engaging to the reader.

☺ 😐 ☹ 3. Integration of example problems and practice

problems into lesson is clear and creative.

☺ 😐 ☹ 4. Paper is typed and is 2-4 pages in length.

☺ 😐 ☹ 5. Background knowledge required for topic is

presented clearly and creatively.

\_\_ \_\_ \_\_ Totals Total Score:

Comments: